WHAT IS CLAIMED IS:

1.   A method of screening for the discovery of disease associated molecular targets for diagnostic or therapeutic intervention, the method comprising;

performing *in vivo* imaging of diseased tissue to provide one or more *in vivo* images;

evaluating said *in vivo* image for imaging features;

obtaining a cellular sample from said diseased tissue, which sample corresponds to said imaging feature;

determining the expression of genes or gene products in said cellular sample;

comparing said expression in said cellular sample with a control tissue;

wherein genes or gene products upregulated in said cellular sample represent molecular targets for therapeutic or diagnostic intervention.

2.   The method according to Claim 1, wherein said *in vivo* imaging comprises magnetic resonance imaging (MRI).

3.   The method according to Claim 2, wherein said MRI is dynamic contrast MRI.

4.   The method according to Claim 1, wherein said step of determining expression of genes comprises hybridization analysis of probes derived from mRNA present in said cellular sample.

5.   The method according to Claim 1, wherein said step of determining expression of gene products comprises proteomic analysis.

6.   The method according to Claim 1, wherein said control sample comprises cells from said diseased tissue, but spatially or temporally separated from said cellular sample.

7.   The method according to Claim 1, wherein said *in vivo* imaging is selected from the group consisting of MRI, MRS, nuclear scintigraphy, PET, CT, ultrasonography, optical imaging, infrared imaging, and x-ray radiography.

8.   A method for individualized imaging of a patient tissue, the method comprising:

analyzing a biopsy or excision sample from said patient for patterns of gene and protein expression;

determining from said patterns of gene expression, molecules that are over-expressed or under-expressed in said biopsy or excision sample, relative to normal or surrounding tissue;

selecting one or more imaging agents or methods, wherein the enhancement of signal obtained with said imaging agent correlates with the expression of one or more genes of interest in the target tissue;

preparing an image of said patient tissue utilizing said imaging agents.

9.   The method of Claim 8, wherein said imaging agent comprises a binding moiety specific for a cell surface molecule that is over-expressed in said target tissue; and an image enhancing label.

10.   The method of Claim 9, wherein said imaging agent is a small molecular weight, extracellular fluid space (ECF) MRI contrast agent.

11.   The method according to Claim 10, wherein said ECF agent is selected from the group consisting of: gadopentetate dimeglumine, gadodiamide, and gadoteridol.

12.   The method according to claim 9, wherein said step of preparing an image is repeated throughout the course of a disease.

13.   The method according to Claim 9, wherein said analyzing a biopsy or excision sample for patterns of gene expression comprises hybridization of nucleic acids derived from said biopsy sample to a polynucleotide microarray.

14.   The method according to Claim 9, wherein said analyzing a biopsy or excision sample for patterns of gene expression comprises proteomic analysis of proteins present in said sample.

15.   The method according to Claim 9, wherein said patient tissue is a tumor tissue.

16.   The method according to Claim 15, wherein said tumor is a breast cancer.

17.   The method according to Claim 9, wherein said over-expressed molecules are proteins.

18.   The method according to Claim 17, wherein said proteins are adhesion molecules.

19.   The method according to Claim 18, wherein said adhesion molecules are integrins.

20.   The method according to Claim 9, wherein two or more binding moieties are selected for imaging.

21.   The method according to Claim 9, further comprising the step of treating said patient with a therapeutic moiety conjugated to said binding moiety.

22.   The method according to Claim 8, wherein said imaging agent is activated by an enzyme that is expressed in said target tissue and which can induce image enhancement by catalysis.